A new subspecies of *Flaveria* (Asteraceae) from Western Australia

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Abstract

A new subspecies of *Flaveria, F. australasica* Hook. subsp. *gilgai* Keighery is described. The subspecies is confined to cracking clay wetlands in the Pilbara Biogeographical Region of Western Australia.

Introduction

Flaveria is a genus of 21 species predominantly from North America which was revised by Powell (1978). In this revision all Australian populations of the genus were referred to a single species *Flaveria australasica* Hook. (Yellow Twin Stem). This species is a close relative of the widespread *F. trinervia* (Spreng.) C. Mohr, which occurs in Africa, India, the Middle East, North and South America and the West Indies. Plants of *Flaveria australasica* were distinguished from *F. trinervia* in cultivation by Powell (1978) on the basis of their taller and more slender habit and narrower, lanceolate leaves.

This species is widespread through arid, semi-arid and subtropical Western Australia, Northern Territory, South Australia, Queensland and New South Wales (Fig. 1).

The Western Australian Department of Conservation and Land Management is conducting a biological survey of the Pilbara Biogeographical Region of Western Australia. This arid tropical region contains a suite of herb and grass dominated cracking clay wetlands, which flood from summer cyclonic rains and are proving to have a distinctive and highly endemic flora. These endemics are largely from widespread normally tropical genera and include undescribed herbaceous taxa of *Boerhavia* (Nyctaginaceae), *Oldenlandia* (Rubiaceae), *Salsola* (Chenopodiaceae) and *Flaveria* (Asteraceae).

Herbarium material of *Flaveria* has been checked at PERTH, MEL and NSW, and collections in NT, AD, HO and BRIS were checked via the Australian Virtual Herbarium. This note describes and illustrates the new subspecies.

Taxonomy

Key (extract from Powell 1978, pp. 606--607)

a. Pappus scales present

b. Leaves perfoliate, to 4–5 cm wide (Chihuahuan Desert) .... *F. chlorifolia* A. Gray

bb. Leaves weakly connate, to 0.7 cm wide (Arizona) .... *F. macdougalii* Theroux, Pinkava & Keil

aa. Pappus absent

c. Receptacle of glomerule setose

d. Achenes 2–2.6 mm long (widespread in North America and elsewhere). ..... *F. trinervia*

dd. Achenes 2.3–4.5 mm long (Australia) ..... *F. australasica*

Key to *Flaveria* in Australia

e. Inflorescences small, 8–12 mm diam. .... *F. australasica* subsp. *australasica*

ee. Inflorescences large, 17–25 mm diam. . *F. australasica* subsp. *gilgai*

***Flaveria australasica* Hook. subsp. *gilgai* G.J. Keighery, subsp. nov.** (Fig. 2)

Herbae annuae, robustae, 40–100 cm altae, erectae vel expansae. Caulis florifer dichotomus, 2–5 cm latus, glaber. Folia 1–5 cm longa, 4–7 mm lata, glabra, margine serrulato vel integro. Capitulum magnum, 17–20 mm latum. Achaenia 3.5–4 mm longa.

Typus: Western Australia, Pilbara Biogeographical Region, 10.5 km. SSE of Mount Bruce, Karijini National Park, 21^0 24'S 117^0 03'E, 20.VIII.2006, G.J. & B.J. Keighery 970 (Holo PERTH , iso CANB, K, MEL).

Erect glabrous robust annual herb, 40–100 cm. tall; older stems smooth, terete, usually red or purple, younger stems smooth, quadrangular, usually green, branching more or less dichotomously towards the inflorescence, roots fibrous.

Leaves opposite, lanceolate to narrowly ovate, 1–5 cm long, 4–7 mm wide at midpoint, green, 3-veined, attenuate, entire or serrulate, glabrous, apex acute. Inflorescence a compound head (capitulescence) of 10–30 partial heads aggregated on a minute, flat, general receptacle. Receptacle with long slender membranous, chaff-like setae. Compound heads solitary, terminal on short branches and in the stem forks, 8–9 mm long and 17–20 mm wide with a common involucre of unequal leafy bracts longer than the head, 31–51 mm long. Heads heterogamous, radiate or disciform, involucral bracts of partial heads 2 or 3, 3–4 mm long, elliptic, obtuse, inrolled. Outermost partial heads comprising a solitary female floret with a yellow ligule ca. 1 mm long, hardly protruding from the bracts; style branches obtuse, glabrous. Inner partial heads with 2–6 tubular bisexual florets; corolla 5-lobed; anthers obtuse at base with ovate apical appendages; style branches truncate with papillose apex. Achenes black, narrowly obovate, 10-ribbed, slightly flattened, ca. 3.5–4.5 mm long by 0.6 mm wide; pappus absent.

This subspecies differs from *Flaveria australasica* subsp. *australasica* in being a robust plant with broad stems, larger leaves, larger inflorescences, longer leaves and bigger achenes. Since it differs in quantitative characters and occupies a distinct ecological niche (where the two taxa do not co-occur) within the overall range of the nominant subspecies (Figs. 1 and 3), recognition at subspecific level seems most appropriate.

Other specimens examined (all PERTH): Hamersley Railway Line, Dampier to Tom Price, 21° 40'S 117° 14'E, X.1968, J.G. Campion s.n.; Hamersley Railway Line, Dampier to Tom Price, 21° 41'S 117° 14'E, X.1968, E.B.J. Smith s.n.; North of Tampanna Bore, Coolawanyah Station, 21° 37'S 117° 44'E, 4.IX.1996, A.A. Mitchell 1476; 10.5 km. SSE of Mount Herbert, Millstream-Chichester National Park, 21° 24'S 117° 03'E, 20.V.1997, M.E. Trudgen 15605.

Distribution: Confined to the central Pilbara Biogeographic Region in arid Western Australia. This distribution is entirely within the range of *Flaveria australasica* subsp. *australasica* (Fig. 1).

Habitat: Recorded as occurring on cracking red clay soils in tussock grasslands of *Astrebla pectinata* or mixed grasslands/herbfields dominated by *Polymeria longifolia, Astrebla elymoides* and *Dichanthium sericeum*.

Flowering Period: Flowering occurs from August to September. Mature fruits and seeds are found from October to December.

Conservation Status: The subspecies is recorded from Karijini and Millstream-Chichester National Parks, but most of the region is uncleared leased grazing lands.

Etymology:The subspecific name denotes the habitat of this taxon. From Ghilgai, an Aboriginal word denoting a soil from inland Australia characterized by a markedly undulating surface with mounds and depressions caused by swelling and cracking of clays during alternate wet and dry seasons.

Reference

Powell, A. M. 1978. Systematics of *Flaveria* (Flaveriinae-Asteraceae). *Ann. Missouri Bot. Gard.* 65: 590--636.

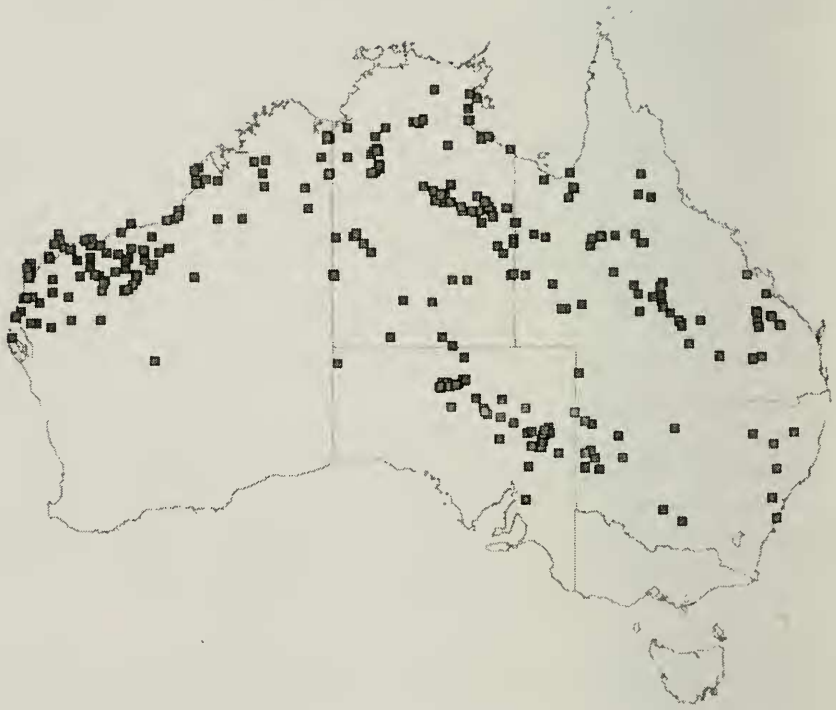

Fig. 1. Distribution of *Flaveria australasica* subsp. *australasica*.

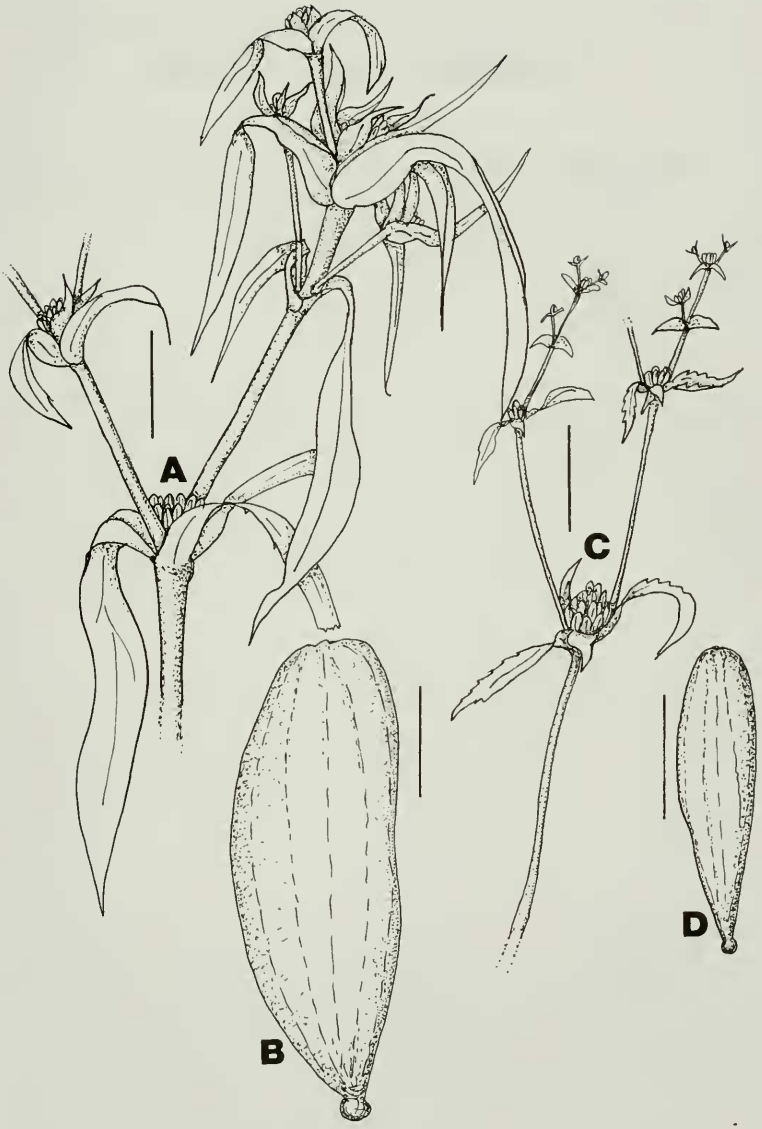

Fig. 2.

A,B *Flaveria australasica* subsp. *gilgai* (G. & B. KEIGHERY 970, PERTH).
A: Flowering branch. B: Achene.
C,D *Flaveria australasica* subsp. *australasica* (TRUDGEN 494, PERTH)
C: Flowering branch. D: Achene.

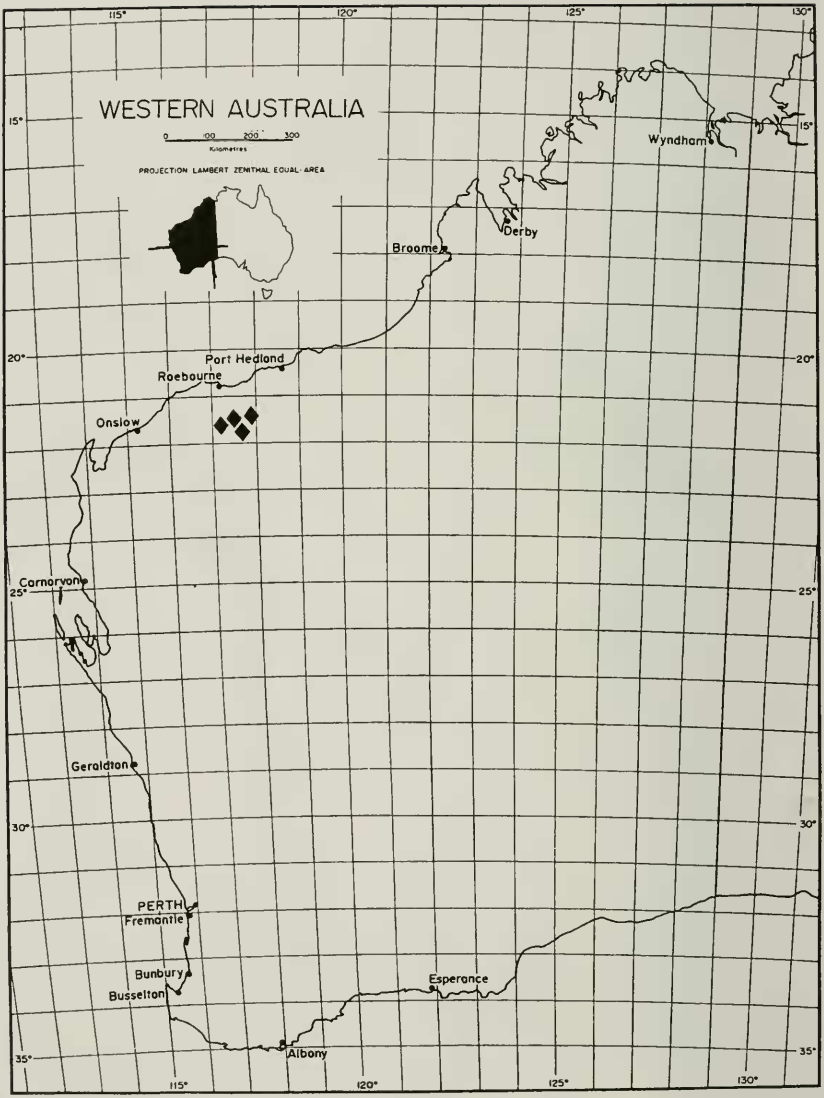

Fig. 3. Distribution of *Flaveria australasica* subsp. *gilgai*.